JOURNAL OF THE SOCIETY OF HEARING AID AUDIOLOGISTS

AUDECIBEL

OCTOBER 1959

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- *The Audiometer* By C. H. "CHUCK" HINZ

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Official journal of the Society of Hearing Aid Audiologists. Published every other month for the Society by Unigraphic Corp. Subscription rate: $3 per year; $4 foreign. Back issues or single copies: 75c each; 2 - 9, 50c each; 10 or more, 40c each. Opinions presented in articles published are those of the author and do not necessarily reflect the official viewpoint of the Society of Hearing Aid Audiologists.

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The Society of Hearing Aid Audiologists is dedicated to the goal of reaching and maintaining the highest possible standards in the field of hearing aid audiology. The purpose of AUDECIBEL is to promote rapport among all those concerned with the hard of hearing so that mutual and overlapping problems may be recognized and outstanding ideas, methods and experiences be shared for the greater benefit of all.

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The President's Page

Welcome to the Annual Meeting!

Once again, let me welcome you to the Annual Meeting of the Society of Hearing Aid Audiologists -- this time, the eighth such meeting held.

Stan Foster, our program chairman, has practically single-handedly put together a program featuring a great array of speakers, panels, and talent. We all owe him a vote of thanks for the hard work he's put in on this task.

The theme of the meeting this year is "Pride, Prestige, and Progress" -- Pride in our Profession; Prestige for our Society; and Progress for the Industry.

As you can see by turning to page six, it's an extremely well-rounded program -- and one of the high spots will be the special entertainment Friday evening, featuring top TV personalities.

I know that if you can possibly make it, you'll be there -- and I want to add that non-members are welcome to attend the Annual Meeting -- with the exception of the business meeting Saturday afternoon, which is open to members only.

If you haven't already made plans to attend, please do so now -- and here's an idea: Why not call your friends in the hearing aid business and invite them to the meeting. You'll be doing them a real favor, for I'm sure that everyone who attends will find new inspiration, enthusiasm, and practical ideas and methods which will be helpful and valuable in his day-to-day work.

See you there!

Kenneth S. Wood

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OFFICIAL PROGRAM

OF THE 8TH ANNUAL MEETING OF THE SOCIETY OF HEARING AID AUDIOLOGISTS, HELD OCTOBER 9TH AND 10TH AT THE HOTEL LASALLE, CHICAGO, ILLINOIS.

Thursday, October 8

1:00 - 9:00 p.m.

REGISTRATION

Friday, October 9

8:00 a.m. - 9:00 a.m.

REGISTRATION

9:00 a.m.

OPENING CEREMONIES

Address of Welcome
President's Address
Introduction of Program Chairman

9:30 a.m.

ADDRESS —By Harry Manzer.

10:30 a.m.

ADDRESS —*Report from the Hearing Aid Industry Conference, Inc.* By Leland Watson.

11:00 a.m.

ADDRESS — Speaker to be Announced.

12:00 Noon

LUNCHEON

ADDRESS — By William Cullen.

2:30 p.m.

ADDRESS — *A Re-Evaluation of the Role of the Hospital and University Hearing Clinic in the Selection of Hearing Aids.* By Dr. E. R. Harford.

3:30 p.m.

ADDRESS — *Private Hearing Aid Industry vs. Government Aid Distribution Program.* By Peter C. Werth.

4:00 p.m.

PANEL — *The Code of Ethics and Rules and Regulations of the Hearing Aid Industry*

Speaking for the manufacturers: Leland Rosemond and Leland Watson.

Speaking for the Society of Hearing Aid Audiologists: Esther R. Daniel and Louis McLean.

6:00 p.m.

Cocktails in Hospitality Suites of the Various Manufacturers.

7:30 p.m.

BANQUET (Main Ballroom). Music provided by orchestra.

9:00 p.m.

DANCING

10:00 p.m.

ENTERTAINMENT

Jodie Gray, vivacious and show-stopping personality — "merely sensational!"

Nicki and Noel, spectacular dance team, skill, comedy.

Pompoff, Thedy and Family, currently at the Tropicana, Las Vegas.

Nip Nelson, master of ceremonies and comedy star; a national feature.

Saturday, October 10

9:00 a.m.

ADDRESS — *Nerve Deafness and Hearing Aids.* By Dr. R. Edwin Shutts.

10:00 a.m.

PANEL — *Changing Concepts in the Relations Among Otologists, Clinical Audiologists, and Hearing Aid Audiologists.*

Speaking for the clinical audiologists: Dr. Richard A. Winchester.

Speaking for the otologists: Dr. David Myers.

Speaking for the hearing aid audiologists: Tony Mynders.

11:15 a.m.

ADDRESS — *Some Psychological Implications for the Hard of Hearing.* By Dr. Sumner C. Hayward.

1:15 p.m.

LUNCHEON

ADDRESS — By Frank Lovejoy.

2:15 p.m.

BUSINESS SESSION (*members only*)

4:00 p.m.

ADDRESS — *The Shape of Things to Come.* By Dr. John H. Furbay.

Who's Who AT THE ANNUAL MEETING

WILLIAM A. CULLEN

Bill Cullen was the first president of the (British) Society of Hearing Aid Audiologists; he's now registrar and examination organizer. He reports that he trained originally as a designer, a job which took him across the continent as a "spy." It was, he adds, surprisingly like hearing aid work. Bill spent nine years with Acousticon, is now Director of Distribution for Cunningham-Beattie. He has lectured extensively throughout the U.K.

ESTHER R. DANIEL

Esther was recently elected president of the California Chapter of the Society of Hearing Aid Audiologists—and she's long been recognized as one of the leaders in the hearing aid field. His office is in San Bernardino, Calif.

DR. JOHN H. FURBAY

John H. Furbay, Ph.D. (Yale), has taught at several universities; has served as president of the College of West Africa in Liberia; and as educational attache to U.S. embassies in Costa Rica and Colombia. Selected by Trans World Airlines to direct its cultural and educational program in 1945, his job covers 25 countries on four continents. The "Philosopher with a Global Reach"—that's John Furbay.

DR. EARL R. HARFORD

Dr. Harford took his Ph.D. in Audiology at Northwestern, is presently director of Northwestern's Hearing Clinic. He has taught at McGill University and has served as director of the Speech and Hearing Clinic at the Royal Victoria Hospital, Montreal.

DR. SUMNER HAYWARD

Dr. Hayward received his Ph.D. in Experimental Psychology from Brown University. He taught at Carleton College and is now assistant to the president at Chatham College. Dr. Hayward has a hard of hearing boy who is now in young adolescence and whose picture has appeared in national publications.

FRANK W. LOVEJOY

Through his 25-year association with Socony Mobil Oil Co., Mr. Lovejoy has been in intimate contact with industry and marketing problems. He's a graduate of Pratt Institute and has studied Business Administration at Harvard. Much of Mr. Lovejoy's popularity as a speaker can be attributed to the fact that he is himself a practical salesman who believes that persons in every walk of life need to know the principles of merchandising.

HARRY MANZER

Many will remember Harry Manzer's inspiring talk presented at last year's Annual Meeting. This year he'll have more to tell us — specifically aimed at the the hearing aid field —and again his talk will be loaded with practical ideas for better selling. Harry, by the way, operates his own insurance agency, has been selling since his teens.

LOUIS McLEAN

One of the best-informed persons in the field of hearing aid audiology, Mr. McLean operates his own distributorship in Dayton, Ohio. He attended Oberlin College and was one of the top bridge and chess experts in the country. He is a Certified Hearing Aid Audiologist.

DR. DAVID MYERS

Dr. Myers received his M.D. from Temple University, afterwards continued to study otology and rhinology. Since 1955 he's served as Professor of Otorhinology at Temple University Medical Center. He's Chief of Ear, Nose and Throat, St. Christopher's Hospital for Children, Philadelphia General Hospital, and Consultant in Ear, Nose and Throat at Valley Forge Army Hospital. He holds memberships and fellowships in several prominent medical societies.

A. P. "TONY" MYNDERS

Tony Mynders, SHAA member, is celebrating his 21st year in the hearing aid business. He's past president of the Philadelphia Distributors Association and was on the Board of the IHAA. He is a member of the Philadelphia Better Hearing Week Committee.

LELAND ROSEMOND

Lee Rosemond has served as president of Otarion Listener Corporation since 1954. He entered the hearing aid business in 1933, joining Sonotone and becoming rapidly promoted to vice president and sales manager. At Otarion, he pioneered in developing the world's first practical eyeglass hearing aid. He serves as executive vice-president of the Hearing Aid Industry Conference.

DR. R. EDWIN SHUTTS

Dr. Shutts (rhymes with "cuts") received his Ph.D. in Audiology from Northwestern. He was director of the Adult Speech & Hearing Clinic, University of Denver, and is now assistant director, Audiology and Speech Center, Walter Reed Army Hospital. He has just completed a research project on tests of lipreading ability, and is about to begin a study of binaural hearing aids.

LELAND WATSON

A graduate of the University of Minnesota and Oxford (England), Lee Watson founded Maico in 1936, has served as its president ever since. With Dr. Thomas Tolan, he co-authored the book "Hearing Tests and Hearing Instruments." He comes from a "medical" family; his father and many of his relatives are physicians. Lee was recently elected president of the Hearing Aid Industry Conference.

PETER C. WERTH

Mr. Werth's letterhead reads "Manufacturers, Wholesalers, Importers, Exporters." His firm, in London, England, carries a wide range of hearing aids and accessories. He served as president of the (British) Society of Hearing Aid Audiologists in 1956 and 1957.

DR. RICHARD A. WINCHESTER

Dr. Winchester received his Ph.D. in Audiology from the University of Southern California. He has taught speech pathology and audiology, has served as a research audiologist and as director of the hearing and speech center, and lecturer in medical audiology, at the VA Hospital, San Francisco. He's now in private practice and is assistant professor of Audiology at the Department of Otorhinology, Temple University Medical Center.

NICKI AN DNOEL

POMPOFF, THEDY & FAMILY

JODIE GRAY

NIP NELSON

TOP ACTS FEATURED AT ANNUAL MEETING

MEMBERS and guests at the Annual Meeting will be entertained by top TV stars at a special program Friday evening. In addition, an orchestra will provide music for listening and dancing. Cost of the entertainment will be borne by the following firms: Acousticon, Audio Co. of America, Audivox, Beltone, Dahlberg, Hal-Hen, *The Hearing Dealer*, Maico, Mallory, *National Hearing Aid Journal*, Otarion, Qualitone, Raytheon, Telex, and Tonemaster.

The TV performers are: Jodie Gray, vivacious and show-stopping personality; Nicki & Noel, spectacular dance team; Pompoff, Thedy & Family (currently at the Tropicana, Las Vegas); and Nip Nelson, MC and comedy star.

Purpose of the program is to provide a way for manufacturers to entertain dealers, while still keeping the entire group together.

Manufacturers will, of course, maintain hospitality suites. Those who attend the Annual Meeting are urged to consult bulletin board for room numbers.

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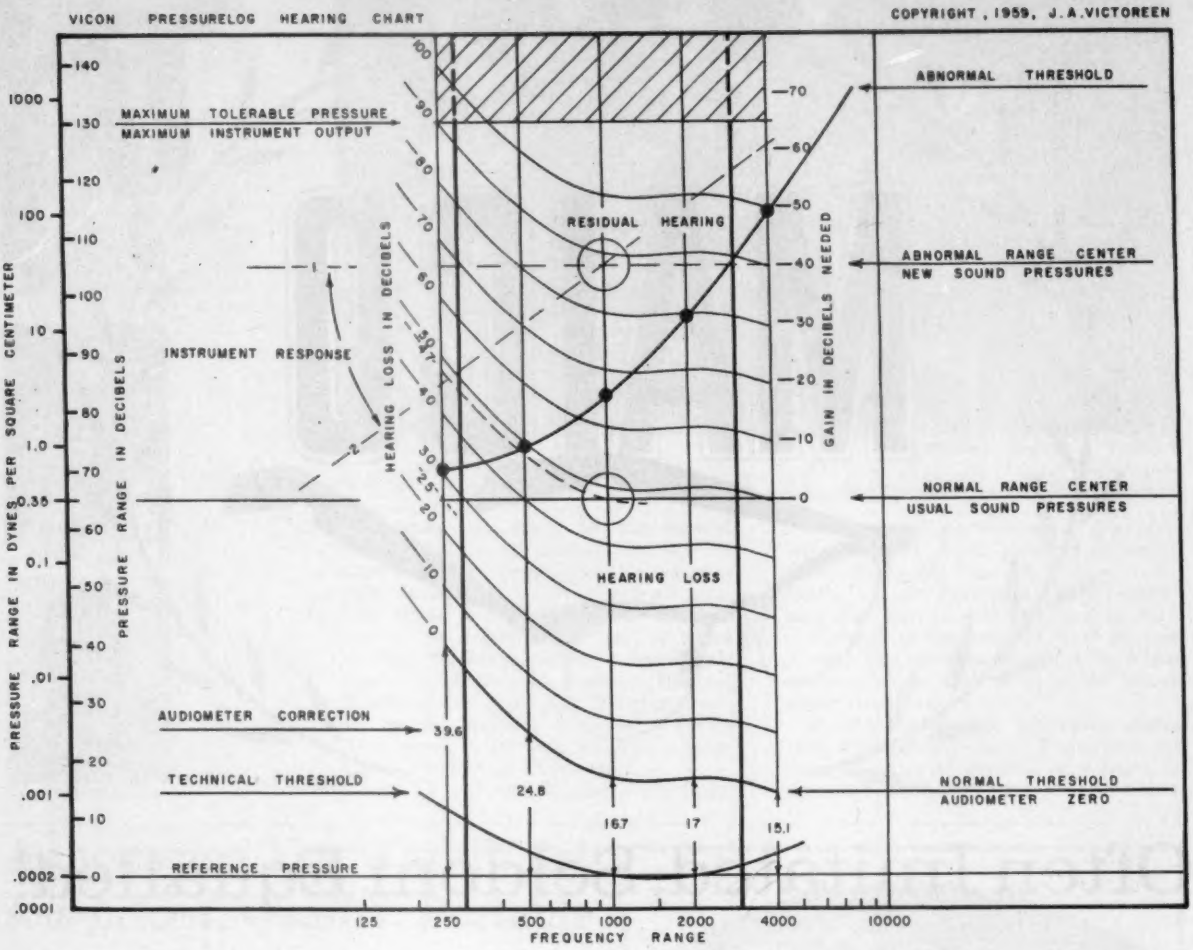

CHART SHOWS relationships between hearing loss, gain, and sound pressures at various frequencies.

THE HEARING

by JOHN A. VICTOREEN
President, The Vicon Instrument Co.

This article discusses the relationships between technical threshold, normal threshold, abnormal threshold, gain in decibels needed, and frequency response of the hearing aid.

RANGE

It is the purpose of this article to show graphically the relations which exist between hearing loss in decibels, gain in decibels, sound pressure in decibels, and real sound pressures at various frequencies. Pressures are shown *vertically* and frequencies *horizontally*. All values shown in the chart are in proper relationship to each other. It will be observed, however, that the lines upon which hearing loss is to be plotted are not straight, but must be curved in accordance with the *normal threshold* curve at the bottom of the graph.

By laying a straight-edge across the graph it will be seen that real sound pressures in dynes/cm² representing gain, loss in decibels, etc., may be read from the vertical column of figures on the extreme left.

For example: The horizontal *normal range center* line passes through the gain scale of decibels at 0 db, the sound pressure range scale of decibels at 65 db, and the real sound pressure scale at about 0.35 dynes/cm². It also passes through the hearing loss scale in decibels at 25 db for a frequency of 250 cps and at 47 db (following the dotted curved lines down) for a frequency of 1000 cps. Evidently the values of 0 db, 65 db, 25 db and 47 db are all *real sound pressures* of 0.35 dynes/cm². A horizontal line drawn across the graph at any other real sound pressure will show relationships at that pressure. Obviously, whenever decibels are specified, it is desirable to include the decibel reference level in order to avoid misinterpretation.

In the field of hearing (as in other fields), technical terms often become shortened through common usage. Statements made in these terms can then be confusing. For example: "The ear showed a hearing loss of 65 db, but when it was fitted with a hearing instrument having a gain of 40 db, 50 db sounds were heard satisfactorily." Without specifying the "kind" of decibels used, the term "decibels" unfortunately appears to have the same meaning wherever it is used as in the preceding sentence. This is not so!

More Complete Statement

A slight modification of this statement, however, adds greatly to understanding. For example: "The ear showed a hearing loss of 65 db (re normal threshold pressure at 1000 cps) but when it was fitted with a hearing instrument having a gain ratio of 40 db (re a ratio of one at 1000 cps), 50 db (re 0.0002 dynes/cm²) sound input pressures were raised to a suitably audible output level."

A regular audiogram shows only hearing loss in decibels with reference to a normal threshold sound pressure. When the readings, taken by means of a commercial audiometer, are plotted, as shown on the chart by the black dots, their relationship to other factors becomes clear. The hearing loss curve may then be referred to the pressure range scale and pressures determined in real units instead of relative units, if desired.

The zero hearing loss line shown on the chart is at the bottom, whereas in conventional audiograms the zero loss line is at the top. This results from the fact that through common usage it is assumed that loss is negative or below zero. Actually hearing loss is measured by the amount of additional pressure required to make a sound barely audible. Hearing loss, from this viewpoint, is properly considered in terms of positive pressure, plotted with the zero lines at the bottom.

Actual sound pressures plotted in this way make it possible to visualize the hearing problem of the particular deafened ear and to observe the effects which will be produced by a proposed method of enhancement.

There is a range of sound pressures which defines the natural limits of pressure over which the normal human ear is intended to operate. The lower pressure limit or threshold is that pressure which can be detected. The upper limit of pressure is that which is painful or intolerable.

There is also a range of frequencies over which the ear operates with varying sensitivity to sound pressure.

Chart Shows Relationships

It is possible to display these two ranges graphically and to construct thereby a "map" showing the factors involved in the measurement and enhancement of defective hearing and their relation to each other, as shown by the accompanying chart.

It is suggested that this presentation be reviewed by following the paragraphs presented below in the order in which they are given, while at the same time observing the corresponding titles shown on the chart.

Pressure Range in Dynes per Square Centimeter. Pressures displayed are real pressures, like pounds per square inch, only very much smaller. The smallest pressure detectable by the human ear under laboratory conditions is assumed to be 0.0002 dynes/cm². This value is used as a standard reference pressure in the field of acoustics. One dyne per square centimeter is the same as 1/4307 ounce per square inch of pressure. The normal upper safe limit is about 1000 dynes/cm². The ratio of 0.0002 to 1000 indicates that a normal ear has a usable pressure range of 1 to 5,000,000. This large range is condensed by using a "logarithmic" spacing system in which equal spaces are numbered 1, 10, 100, 1000, etc., instead of the usual 1, 2, 3, 4, etc.

Pressure Range in Decibels. Decibels of pressure are always related to some reference pressure which can be seen to be 0.0002 dynes/cm² (which represents 0 db). Decibels of pressure cover the same pressure range (0.0002 to 1000 dynes/cm²) but use different numbers to represent the pressure.

(Continued on page 12)

Units Must Be Given

When a plotted curve is to be described in detail it is necessary to give the units in which the quantities are expressed. For example: A curve showing the pressure in dynes/cm² produced by a hearing instrument at various frequencies in cycles per second.

Graphs or plotted curves show, visually, relationships which cannot be suitably shown in any other way. A graph cannot have visual meaning, however, unless the units in which it is plotted are completely understood.

IT IS very convenient to represent a technical effect graphically by means of a curve or line which travels across a piece of "calibrated" paper. A sheet of paper has two dimensions which can be used, a vertical or up and down direction and a horizontal or side direction. The vertical direction is numbered in terms or units which describe the thing which is to be changed.

A "curve" which has been drawn across such a "calibrated" sheet shows visually how the vertical quantity changes with various horizontal units. Vertical height of each point on such a curve gives the vertical quantity *at* the horizontal position indicated.

A plotted curve or graphic representation may be described generally in terms of vertical *versus* horizontal units. For example: A curve showing pressure *versus* frequency change.

● THE HEARING RANGE

(Continued from page 11)

Decibels are "logarithmic" numbers so that equal spacing on the pressure scale is represented in simple proportion by the numbers 0, 20, 40, 80, etc., instead of 1, 10, 100, 1000, etc.

Maximum Tolerable Pressure. The results of industrial noise surveys show that repeated exposure to excessive sound pressure eventually impairs hearing. Much depends upon the kind of sound and its duration. 130 db sound pressure is assumed here to be the safe maximum pressure for a normal ear. In some cases of abnormality this value can be exceeded. It is not the intention here to interpret what may or may not be a safe tolerable pressure because this varies with many factors. It is possible that continuous exposure to some types of sound may be detrimental at values less than 130 db.

Anything which limits the maximum pressure available to the eardrum to a value which is less than it should be, reduces the useful operating range available to the ear. However, an ear which cannot tolerate 130 db sound pressure without severe discomfort must be limited artificially to a maximum pressure which can be tolerated. This can be done by using a hearing instrument which does not produce pressures which are unsafe or high enough to cause discomfort, but this is done at a sacrifice of operating range.

Reference Pressure. Under carefully controlled laboratory conditions it has been found that the sound pressure threshold approaches 0.0002 dynes/cm² at 1000 cps. This pressure is used as a standard reference pressure.

Frequency Range. The practical audible range of frequencies extends from about 30 cycles to about 12,000 cps. Most of the useful sounds in nature, however, such as human speech sounds, are concentrated in the frequency range below 3000 cps. If all sounds below 300 or above 3000 cps are eliminated, little speech intelligibility is lost. This is the frequency range covered by high quality hearing instruments. This is slightly more than 3 octaves, each octave being a doubling of frequency; for example, 300 to 600, 600 to 1200, 1200 to 2400 cps.

For hearing enhancement purposes the area included within the boundary of the heavy vertical lines may be considered as a practical hearing range limited to frequencies between 300 and 3000 cps.

Upper and lower pressure limits for a given ear are determined by the maximum tolerable pressure and threshold, respectively.

Technical Threshold. The sensitivity of the ear varies with frequency, so the Technical Threshold sound pressure varies with frequency as shown. The controlled conditions required to obtain these values are impractical. They represent ideal limits and are not used in practice. Measurements made under ordinary reasonable conditions produce pressure values which are about 16.7 db higher at 1000 cycles per second and vary with frequency and environment.

Normal Threshold — Audiometer Zero. Commercial audiometers are not calibrated directly in terms of pressure in decibels, but in terms of minimum detectable pressure or threshold pressure for average normal ears. The pressure sensitivity of the normal ear varies with frequency in accordance with the normal threshold pressure curve as shown. (This curve is in accordance with the values given in the ASA Standard Z24.12-1952). The pressure values obtained from this normal threshold curve at the various frequencies are used as a *correction* for commercial audiometers. This is included in the audiometer calibration in such a way that commercial audiometer readings will always be zero at any frequency with a "normal" ear.

Real pressures represented by zero decibels on such an audiometer are therefore different for each frequency. Audiometer readings of hearing loss in decibels do not refer to the standard reference pressure of 0.002 dynes/cm² under any circumstances. Decibels indicated by the usual audiometer refer to pressure ratios *above normal threshold pressure*, so the real reference pressure is different for each frequency, because of the audiometer correction.

Audiometer Correction. An audiometer is designed to indicate hearing loss at threshold pressure. When used with normal ears there will be no loss shown and the usual audiometer will read zero decibels at each frequency.

Minimum detectable pressure for normal ears varies with frequency as shown by the *Normal Threshold Curve.* As all sound pressures are referred to the standard reference pressure of 0.0002 dynes/cm² (which is also 0 db of pressure) it becomes necessary to make the audiometer produce real pressures which are greater than 0 db at each frequency in order for the normal ear to detect them. The amount of pressure increase varies with frequency and is given by the normal threshold curve. This is seen to require a 16.7 db correction at 1000 cps. When an audiometer indicates 0 db (re Normal) of hearing loss at 1000 cps, the pressure delivered to the ear is 16.7 db (re 0.0002 dynes/cm²), 24.8 db at 500 cps, etc.

Abnormal Threshold. This curve shows an arbitrary abnormal threshold for a deafened ear presenting a hearing loss of 65 db at 1000 cps as shown by the usual audiometer. The curve chosen has a slope of about 11 decibels per octave. Any other curve shape or loss may be found in practice. This curve shows the values at different frequencies to which sound pressure must be raised to be just audible to the deafened ear.

Hearing Loss in Decibels. This scale represents readings taken by the usual audiometer. The calibration lines opposite each number are curved in order to include the correction factor due to the normal threshold curve.

Hearing Loss. Hearing loss in decibels may be represented by the difference in pressure (expressed in decibels) between a standard normal threshold pressure and an abnormal threshold pressure at a specific frequency. A series of such values, obtained at different frequencies, is expressed by the abnormal threshold curve.

Hearing loss refers to the area *below* the abnormal threshold curve. It reflects a reduction in sensitivity of the ear to sound pressure. It refers to the pressure range over which the ear no longer functions.

Residual Hearing. The area *above* an abnormal threshold curve which lies between it and the maximum tolerable pressure of the particular ear represents the pressure and frequency ranges over which an abnormal ear must function. Any sound pressures to be heard by or be useful to the deafened ear must either exist within this pressure region or be artificially raised to a level that is within the region.

Normal Range Center. This is represented by the lower circle. This may be considered as the center of pressure operation which is about halfway between the normal maximum tolerable pressure of 130 db and 0 db. The value of 65 db obtained in this manner also coincides approximately with the center of the useful sounds usually encountered by the ear. Speech sounds exist at a pressure level of about 65 db (re 0.0002 dynes/cm²).

Abnormal Range Center. This is represented by the upper circle. Abnormally high threshold pressures required by an abnormal ear shift the useful range center to a higher pressure than normal, which is approximately halfway between the usable pressure limits. The abnormal range center preferred by a particular deafened ear may not be exactly halfway between the maximum tolerable pressure and the threshold pressure as

(Continued on page 23)

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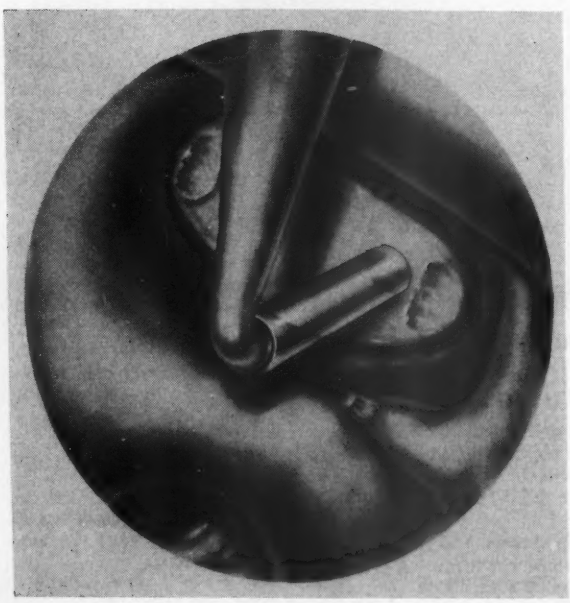
ADVANCES IN STAPES MOBILIZATION

By ALAN AUSTIN SCHEER, M.D.

ARROWS INDICATE breaks in arms of stapes (Fig. 1, top), resulting from mobilization procedure. Fig. 2 (bottom) shows arms removed, polyethylene tube in place.



THE mobilization of the stapes operation has gone through constant changes since 1953 when it was first actively used for the restoration of hearing in otosclerotic deafness. Each year has led to further advances because of the pooling and interchange of ideas by the ear surgeons who have been concentrating on this work. It will be of interest to you to know how one of our basic problems has been overcome as a result of a recently developed technique.

First I would like to give you a brief review of the physiology of hearing and a little about otosclerosis, so that you will understand the purpose of the surgery.

When sound waves strike the ear drum it is set in motion. These vibrations are then carried across the middle ear air space by three tiny connecting bones to the auditory nerve in the inner ear. The sound must be conducted to the nerve before it can be sent to the brain where it is interpreted.

In otosclerosis the innermost bone of the conducting mechanism which is shaped like a stirrup (the stapes) becomes locked in place by an overgrowth of new bone formation so that the sound transmission is stopped before it reaches the auditory nerve. The purpose of mobilization surgery in otosclerosis is entirely focused on the loosening of the stapes, so that it will again transmit sound to the inner ear.

There have been many problems to overcome in this delicate work since it is all performed through the ear canal on a tiny delicate bone, the stapes, which is about the size of a half grain of rice.

The use of the operating microscope has made possible many advances since the original technique suggested by Dr. Samuel Rosen. At first all attempts to loosen the stirrup (the stapes) were done well above the area of actual fixation. Improved techniques have enabled the surgeon to accomplish more when working down at the actual location where the locking occurs.

(Continued on page 16)

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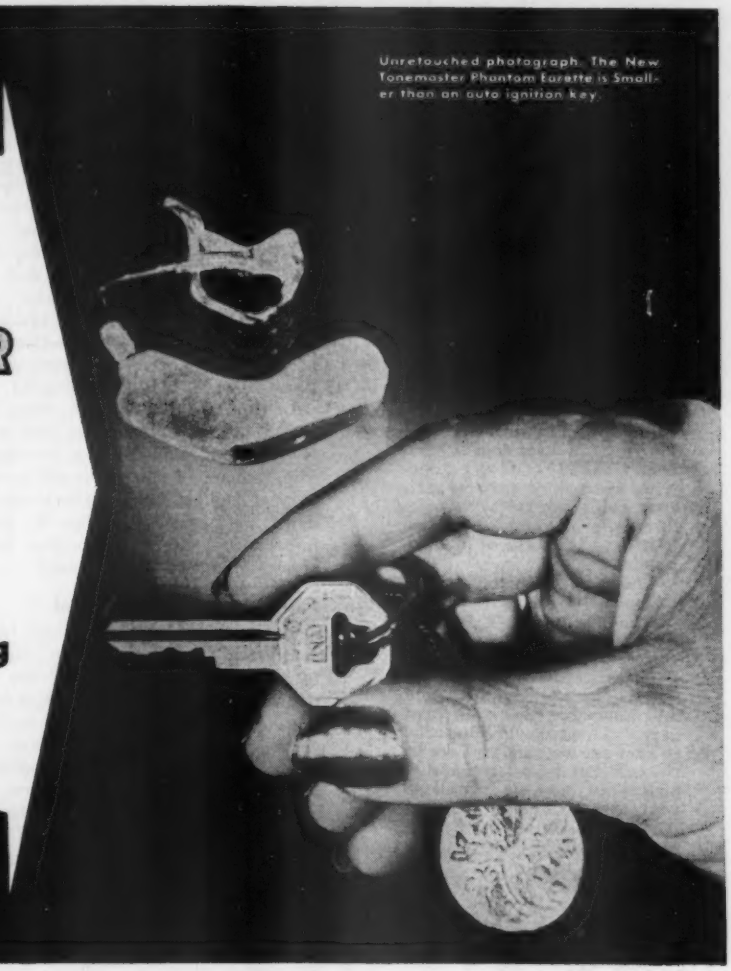

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● STAPES MOBILIZATION

(Continued from page 14)

Still it has not been possible to restore and maintain hearing in all patients. There have been many cases where the bone was too solidly fixed so that the small arms of the stirrup broke apart before the entire stapes could be loosened.

If you will picture a stirrup from a riding saddle and realize that once these little arms have come away from the bottom part in which the foot rests (which is the portion that is locked) you will understand why these cases have failed (Fig. I).

In this situation, where these little arms are broken, there is now a gap in the sound transmitting mechanism. The hearing is not worsened as a result of this separation because it is down to begin with, but it cannot improve. Actually the bottom of the bone remains as fixed as ever.

Fenestration Not Practical

To overcome this situation, it was suggested that fenestration (or perforating) of the bottom of the stirrup would be sufficient to allow transmission of sound to the auditory nerve. Experience has shown us that this is not a practical procedure to use, since it will rarely work, and any gain in hearing that is obtained is very temporary.

So you see that the main cause of failure that we have had to face with the mobilization procedure is that in certain cases the stapes will break before it can be completely loosened. We know that to restore hearing there must be mobility of all three bones in the middle ear and that they must be touching each other in a proper manner to transmit sound. Any break in this continuity is like a break in an electrical line.

In the beginning of this work, 66% of all cases failed because this tiny stirrup was broken. Present methods have cut this group of failures down to about 25%. However, this is still a sizable group, so that much 2....Advances in the Stapes Mobil .... consideration has been given to salvaging hearing for these patients where a gap in the conducting mechanism has occurred.

New Procedure

Today we have what is apparently a predictable and reliable method of reestablishing the sound conducting mechanism. It has been used on patients who have had a previous unsuccessful mobilization operation as well as for that group of 25% of cases where the stapes will still break under any circumstances. The basic principle of the procedure is:

1. The broken arms and top of the stapes (leaving only the bottom of the stirrup) are completely removed from the ear.

2. This allows the surgeon to look directly at the footplate (the bottom of the stirrup) which is the part of the bone actually locked in place. It has never been possible to visualize this fixed area as well as it is now with these parts removed. The result is that the fixed portion of the stirrup can now be loosened in all except very advanced cases.

3. This still leaves a gap between the middle bone (the incus) of the sound-conducting mechanism and the bottom of the stapes. This gap is then closed with a tiny polyethylene tube so that one end sits on the now movable bottom of the stapes and the upper end is locked in place under the incus, which originally had been in contact with the top of the stapes (Fig. 2). The polyethylene tube now becomes part of the sound transmitting mechanism and takes the place of the arms of the stapes which were broken and removed.

When this technique is used in the proper case, it is possible to obtain an improvement in hearing that is equivalent to that obtained when the stapes is loosened without being broken.

This polyethylene tube is an inert substance that has been used for surgery in other parts of the body, so that it can be left in the middle ear without worry.

This procedure has salvaged hearing for patients where previous mobilization surgery has failed and at the same time is decreasing the number of poor results for those undergoing this surgery for the first time. There are also reasons to believe that the hearing obtained with this prosthesis technique wil have a higher rate of permanence than has been observed with the general overall mobilization results.

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The Audiometer

A BASIC TOOL FOR PHYSICIANS AND HEARING AID AUDIOLOGISTS

Excerpts from a speech presented by C. H. Hinz, vice-president and sales manager, the Qualitone Co., at the West Coast Meeting of the Society of Hearing Aid Audiologists, May 9th and 10th, 1959.

IT IS difficult to find words that will really express how much I am impressed and how excited I am to be standing before this, the West Coast Meeting of the Hearing Aid Audiologists.

The air in this room is charged with a current of resounding and exciting purpose, and this gives me a wonderful feeling, because without purpose so little can be accomplished. With the purpose this group has in mind and with the intelligent application of that purpose, I am most confident you will achieve all of your aims.

As an example of the meaning of purpose, I hold up before your eyes two needles. Each is threaded and ready for use. The one that I hold in my left hand is an ordinary household needle. Its purpose is to sew a button on Dad's shirt, or sew up the rips in Johnny's pants. In my right hand I hold before you another needle, all threaded and ready to use. This needle is a surgical needle designed for an entirely different sewing purpose. It is designed to sew tendons, torn tissue and muscles. I suppose that if we disregard the purpose for which each needle was designed, both could be used to sew the button on Dad's shirt or to sew up the tear in Johnny's jeans, but what a waste of purpose that would be. When something is designed for a specific purpose, and when the purpose is defined and intelligently applied, it becomes a specific tool to accomplish a specific purpose — and it should be used accordingly.

This same vein of purpose applies to the hearing aid dealer and to those in the medical profession. Each has a specific purpose in his dealing with the hard of hearing. There are, to be sure, certain fringe interchanges of purpose, but I think when we separate that which is medical from that which is in the realm of the hearing aid dealer, we can quickly see that each accomplishes a special function based on his special purpose.

And to carry the difference a little further, each uses a different set of tools to bring about the results of his purpose.

The audiometer is one of the basic tools of the hearing aid dealer and of the medical profession. Audiometers fall into two basic types — one is the combination speech and pure tone audiometer, which is used by the hearing aid dealer for the fitting of hearing aids, and the second is the medical diagnostic audiometer, which is used primarily by the medical profession. Each is designed with a specific purpose in mind.

The medical audiometer is used to determine the type of loss and its location. It assists in establishing the causes of a hearing loss by measuring the effects that appear in terms of the test results and the audiogram. In order to do this accurately, the medical profession must, of necessity, have an audiometer which is far more refined than the type used by the hearing aid dealer in the fitting of the hearing aid.

You see, the doctor's main purpose is prevention or medical correction, whereas, the hearing aid dealer's purpose begins where the doctor leaves off — that of applying this prosthetic appliance we have chosen to call the hearing aid.

The hearing aid man wants to know how much loss is present, where, how well the person can hear with an aid, and how he can best fit the person. But consider what the doctor looks for when he conducts his hearing evalution! Here are but a few of the things he looks for — cerebral deafness, Ménière's disease, physical malformations, otosclerosis, psychological problems, sinusitism, nasal allergy, tuberculosis, cancer, epilepsy, and on and on through the manifold diseases of man which can temporarily or permanently damage his hearing.

So the doctor makes numerous and exhaustive tests in which he checks and rechecks many of his findings so that he can pinpoint the problems of the hearing loss and accurately prescribe correction. The knowledge that he derives from his tests and from his evaluation are the influencing facts that result in his prescribing a cure, perhaps suggesting an occupational change to prevent further damage, a recommendation of surgery or other alternatives per-

About the speaker . . .

C. H. "Chuck" Hinz (rhymes with *lines*) is vice-president in charge of sales for The Qualitone Hearing Aid Co. Chuck, aided by four division men, keeps in constant contact with about 250-300 U.S. dealers who handle the Qualitone line. Chuck is also a member of Qualitone's Board of Directors and was one of the "founding fathers" of the firm when it was organized five years ago. Before joining Qualitone, he spent four years with the Department of Justice and seven years with another hearing aid manufacturer. He lives with his wife and nine children (6 boys, 3 girls) in Minneapolis.

taining to the causes and cures of the ailment.

Yes, basically, the doctor is interested in a diagnosis for remedial or corrective actions. Where no remedy or surgical correction is possible, then it should also be the doctor's purpose to refer the patient to a qualified Society member for the fitting of a hearing aid, if benefit can be derived from the use of a hearing aid.

On the other hand, the audiometer which is used by the hearing aid dealer has as its primary purpose a reversal of the diagnostic purposes of the medical audiometer. The purpose of the hearing aid dealer in his audiometric tests is to measure the residual hearing both as to its character and nature, and through the use of Spondee and PB words to measure the understanding that remains in the residual hearing. As I said earlier, he begins where the doctor leaves off.

By way of comparison, we must understand that, for the doctor to obtain the information which he needs for his diagnosis, the instrument he uses must go far beyond the speech range in order to indicate trends, for trends are highly important from a clinical point of view. Whereas the speech and pure-tone audiometer usually tests in the relative area of the speech range of 500 to 4000 cycles, the medical audiometer tests from 125 through 8000 cycles as a minimum, and in many cases goes well beyond the 8000-cycle range.

Let us take a moment and reflect on the manner in which the scope of audiometric diagnosis has expanded in the last few years. Those of us who have been in the business since World War II may have come to think of malingering in terms of the rehabilitation program established by the Veterans Administration, at which time malingering was a great government concern. We came to know the tests which detect malingering as a way to keep veterans from establishing claims for hearing losses which they did not actually have.

This is no longer true.

In this noisy world in which we live, and in the noisy and industrial complex in which we work, hearing losses have become hazards of our daily living and daily working, and under many state laws have become compensible as an occupational injury.

Today the medical profession is faced with not only the physical problems of diagnosis for patients at large, but they are also faced with protective medicine and research aimed at lowering the noise level in industry and in our daily lives.

It is now common practice to have pre-employment hearing tests to be sure that new employees do not have a hearing loss, as well as periodic hearing tests throughout the person's employment to determine whether a loss is occurring and, if so, to what extent.

Consequently, we have the malingering applicant who has a hearing loss but tries to beat the audiometer so that his record will show he was employed without a loss. By malingering in this manner, the potential employee can later apply for compensation, claiming that his loss occurred during the course of his employment. So we are really faced with two types of malingering — the one who hears a sound but claims that he doesn't, and the other who does not hear a sound but claims that he does!

> "Where no remedy or surgical correction is possible, then it should also be the doctor's purpose to refer the patient to a qualified Society member for the fitting of a hearing aid, if benefit can be derived from the use of a hearing aid."

The medical profession has established a series of tests to weed out malingerers and psychogenic losses. These tests, of course, could not be accomplished on an audiometer which does not contain the refinements incorporated in the medical audiometer. On this audiometer the doctor can use the Stenger test, the Modified Stenger, the Lombard, and many similar tests which definitely trip the malingerer. Other complicated tests present an audiogram picture which enables the doctor to proceed with treatment or recommendation.

I am confident that the sincere medical practitioner does everything in his power to arrest and to correct a patient's hearing loss. That is his job — that is his purpose. He is not interested in the hearing aid business as his business. But in this world where we must face realities, there are some whom the doctor cannot help either through the mechanics of surgery or through the application of medicine, and where perception remains, it should also be the doctor's purpose to recommend that this type of patient procure and wear a hearing aid.

A doctor who does not follow this procedure, in my opinion, fails in his purpose and fails in his duty to his profession and to his patient.

When the hearing aid dealer tests the prospect, he uses a sequence of pure tones to establish the degree of loss in each of the frequencies and to establish the location of the loss, whether it is conductive, nerve or mixed. These are common terms to all of us. Simply defined, a conductive loss occurs when the passage of sound to the inner ear is obstructed. A nerve loss, with its problems of perception, results from abnormalities in the inner ear, in the nerve pathways to the higher centers in the brain, or in the brain centers. A mixed loss, of course, is made up of a portion of both conductive and nerve impairments.

The results of these tests assist him by telling him the approximate power that will be required to give this person good hearing and also to establish the areas in the frequencies range where he needs the most help.

But pure-tone testing is not enough. While it may locate the loss and tell the extent of the loss, it tells nothing of how a person understands what he hears. We must also accomplish a speech test that includes a measurement of the threshold of speech, the comfortable level and the pain threshold through the use of Spondee words.

All of these tests are, of course, intensity tests. They tell us how loud words must be to reach these various thresholds. While they may indicate understanding, too, the most important and accurate speech test of all is the PB50 word speech perception test, which is definitely a perception test and measures quite accurately how well a person hears and understands in each ear.

Just as the medical doctor has a purpose and duty with respect to his patient, so has the hearing aid dealer a purpose and duty with respect to his prospect. We all recognize that the ears, just as the eyes, cannot always be mechanically corrected.

There are people wearing glasses who are half-blind when wearing glasses, just as there are people wearing hearing aids who are still half-deaf despite the fact that they are wearing hearing aids.

I use the term "half-deaf" loosely, and I am sure you know what I mean, because the reference is to the fact that the hearing mechanism might

(Continued on page 20)

● THE AUDIOMETER

(Continued from page 19)

not respond to some of the frequencies that are so essential to the speech range and, consequently, the user may hear the word but not fully understand it because he does not get the word in its true sound perspective because of a physical deficiency in his hearing mechanism.

That is why it is extremely important for the hearing aid dealer to very carefully appraise the results of his perception test, because it is his duty to explain to the prospect just how much he can actually expect from the use of a hearing aid.

Where the loss is a conductive loss, it usually follows that power is the only requirement and results will be good. Where the speech perception tests rates from 80% to 100%, good results can also be expected through the use of a hearing aid.

But as the perception score drops below 80% and begins to reach the low 70's and the 60's, the conscientious hearing aid dealer should then point out to his prospect the physical limitations that are placed on the use of a hearing aid and should instruct him in the methods which he should use to obtain maximum results.

As an example of this, I am sure you must recognize that we are all, from the day of our birth, born expression readers. We can tell from the expression on a Mother's face whether she is happy or angry. We can tell from the expression on a teacher's face whether she is pleased or displeased, and while this type of expression - reading is not to be classed in the formal term of lip-reading, we are, nonetheless, extremely adaptable human beings who become, through experience, excellent expression readers and lip-readers.

In cases where perception is less than perfect, the hearing aid dealer should instruct his patient to recognize the tremendous interrelation between the eye and the ear in the process of hearing.

In the final analysis, the ear and the eye are each but tools of the brain. The eye presents an optical stimuli which activates the brain, and the ear presents a sound stimuli which activates the brain. From each of these varied stimuli the brain forms an interpretation which is visual or audio. In many, many cases, the ear supplies what the eye does not see, such as the location of a sound, and in many cases the eye supplies what the ear does not hear, such as a mis-heard word that is corrected by the optical stimuli the hearing aid user receives when he reads the expression of the speaker and follows the formation of the lips as the particular word is spoken. The mind is like a spotlight — it "sees" or "hears" what it turns its attention toward.

You've all heard an unhappy wife say, "He hears what he wants to hear." That's really another way to say, "He hears when he pays attention." So counsel your hearing aid users in the matter of paying attention. It will increase the efficiency of their hearing aid 100%.

A hearing loss is a social and financial problem. It impairs a person's social life, it decreases his earning power as a worker. Both the hearing aid dealer and the doctor point their efforts toward changing both of these unhappy circumstances. I do not have statistics on what the medical profession has done in the way of rehabilitation in these two fields, but it must be tremendous. However, I can cite the results of a survey made among people rehabilitated through the use of a properly fitted hearing aid. Just listen to this —

"2500 hard-of-hearing workers unaided by a hearing aid, earned $1,630,000. During the first year after being fitted with hearing aids, the income of this same group jumped to $5,690,000, an increase of 254%!"

(Continued on page 30)

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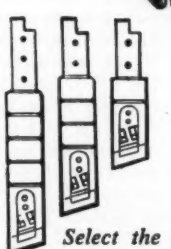

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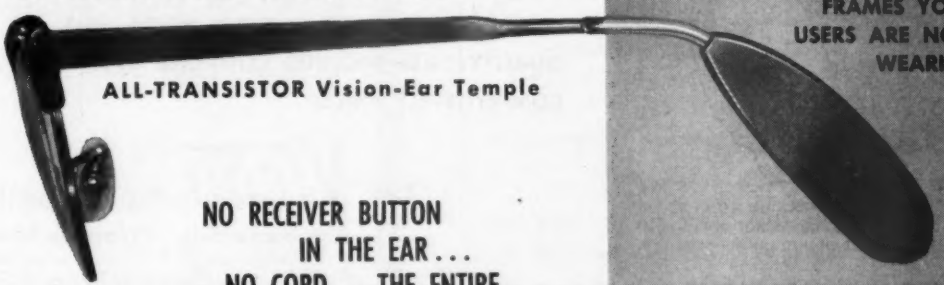

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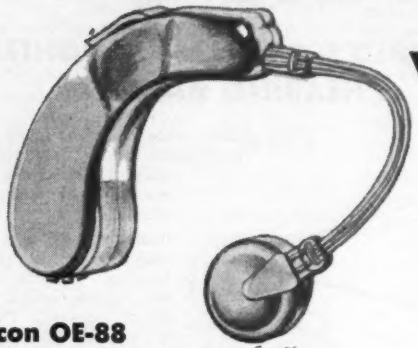
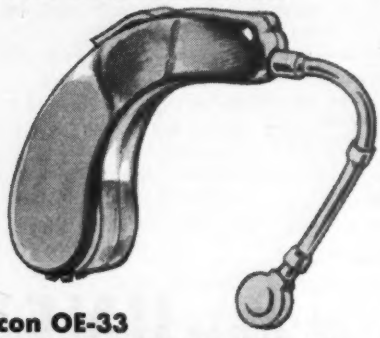


Vicon OE-88
Maximum performance in an On-The-Head Model. 128 ± 3 decibels maximum output pressure; high gain, unsurpassed clarity and freedom from distortion.



Vicon OE-33
Preferred by those who wear glasses, but do not want hearing-glasses, and by men because the Vicon OE-33 can easily be concealed behind the ear. 119 to 122 decibels maximum output pressure.

Vicon OE-22
Preferred by women because it fits up on the ear, well above many hair styles. 119 to 122 decibels maximum output pressure.

with *Vicon*

On-The-Head Instruments

- **Beautifully and comfortably contoured to fit snugly behind the ear.**
- **Complete acoustical systems; choice of internal or external receiver.**
- **Powered by popular, long-life, E675 battery.**
- **Convenient finger-tip control.**
- **Choice of gunmetal, bronze or flesh color.**
- **Guaranteed two full years against defects in materials or workmanship.**

Clients you could never satisfactorily fit before can now enjoy the freedom and cosmetic advantages of an on-the-head instrument. The Vicon OE-22 and 33 Models have a maximum output pressure of about 120 decibels, giving full, rich amplification over a wide frequency range. Vicon OE-88 delivers a maximum output pressure of about 130 decibels.

Like all other Vicon Hearing Instruments, the Vicon On-The-Head Models are prescription quality. You receive individual performance specifications with each Instrument.

Use the handy coupon below to send for complete information.

VICON MANUFACTURES OTHER MONAURAL AND STEREOPHONIC INSTRUMENTS TO FIT VARIOUS NEEDS. ALL ARE PRESCRIPTION QUALITY. ALL INCLUDE COMPLETE SPECIFICATIONS. ALL ARE COMPETITIVELY PRICED.

THE *Vicon* INSTRUMENT COMPANY
189 Vicon Bldg., Colorado Springs, Colorado
Phone: MElrose 5-3568

THE *Vicon* INSTRUMENT COMPANY
189 Vicon Building, Colorado Springs, Colo.

Gentlemen:
Please send me complete information about Vicon Hearing Instruments and a Vicon dealership.

NAME _____

DEALERSHIP _____

ADDRESS _____

CITY _____ ZONE ___ STATE _____

BE SURE TO VISIT THE VICON RECEPTION CENTER AT THE SHAA ANNUAL MEETING IN CHICAGO!

● THE HEARING RANGE

(Continued from page 12)

shown. It may be at a pressure somewhat lower than center pressure when hearing loss is less severe.

Gain in Decibels Needed. This is the ratio of sound pressures, expressed in decibels, required to raise usual sound pressures from the natural value, to values which are within the residual hearing range. In the chart, the gain needed at 1000 cps to raise the normal range center sound pressure to the abnormal range center is 40 db. At other frequencies the gain required will be more or less than this as described in the paragraph under *Instrument Response.*

Hearing loss is not corrected by an equal gain. If a gain of 65 db were applied to the 65 db loss at 1000 cps as shown, normal sounds at a 65 db level would be raised to 130 db which would make them all intolerable. 40 db of gain is sufficient to raise 65 db sound pressures to the new center of operation at 1000 cps. The gain required for maximum enhancement, however, also depends upon the frequency response of the amplifier and frequency response of the particular ear and so may differ somewhat from the 1000 cps center value determination.

Usual Sound Pressures. For these purposes it is assumed that an individual with a hearing loss will be most interested in sounds that occur most often or are most commonly encountered. 65 db (re 0.0002 dynes/cm^2) represents the approximate level at which speech sounds are received by the normal ear.

It is to be noted that any description of sound pressure levels must be approximate. Sound pressure cycles contain such complex pressure variations that they are not truly described in terms of average sound pressure or frequency. There is, however, no other simple way to indicate the relative "size" of sounds.

Amplification of usually encountered sounds increases the pressure at which these are received by the deafened ear. If an average sound is assumed to occur at a pressure of 65 db (re 0.0002 dynes/cm^2), then amplified sounds will all be increased to a new sound pressure level determined by the gain used.

Maximum Instrument Output. An instrument which limits pressure to a value less than maximum safe tolerable pressure reduces the operating range of pressures available to the ear. The residual hearing range of many deafened ears is so small that a change of 10 db in maximum pressure may make a great difference in intelligibility or comfort.

Instrument Response. Frequency response of an instrument refers to a designed variation in gain which occurs as frequency is changed. A "flat" response means that gain does not change with frequency. This is not usually desirable because an abnormal threshold curve generally requires increasing pressures as frequency is increased for best enhancement. Response Curve No. 1 (0 db/oct) does not reproduce amplified sounds of different frequency in the center of the angular area of the residual range as well as Response Curve No. 2 (11 db/oct). Some arbitrarily chosen response between these limits is usually found most desirable by an individual.

Type of Loss. The presentation which has been given applies to any type of hearing loss. Values shown, however, apply particularly to mixed hearing loss. In cases of conductive loss, the maximum tolerable pressure increases at the same time the threshold pressures increase, so that a larger residual hearing range is usually available. The *abnormal range center* may therefore be higher in cases of conductive loss than in cases of pure nerve impairment. When this is known, it is possible to exceed the normal maximum safe pressure to provide additional operating range.

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It's important

THAT YOU KNOW WHERE TO BUY QUALITY

Earmolds

ANY STYLE * ANY MATERIAL

No matter what your requirements as to earmold style or material we can meet your needs with a quality product. Twenty years of continuous, high-quality production backs our claim.

Have you tried

Formtex Impression Compound

- Mixes rapidly
- Sets slowly
- Not tacky
- No ear distortion
- Absolutely no shrinkage

Use this greatly improved product and be convinced.

Ask for our brochure and further particulars

SCIENTIFIC MOULDING LABORATORIES

55 E. WASHINGTON STREET
CHICAGO 2, ILLINOIS

Highest Quality Products for 20 Years

SOCIETY OF HEARING AID AUDIOLOGISTS Seal of Excellence

CERTIFICATION AND YOU

If you are a hearing aid dealer or consultant who has not yet been certified, you are invited to send in the coupon below. We'll be glad to send information about the value of certification and membership in the Society of Hearing Aid Audiologists.

SOCIETY OF HEARING AID AUDIOLOGISTS
260 Southfield Rd., Detroit 29, Mich.

Please send information about certification.

Name_____

Company_____

Address_____

City_____

State_____

New Products & Equipment

New Repair Material Stops Feedback

A new soft finish plastic rebuilder that sets right in the client's ear is said to stop feedback immediately without the necessity of making a new earmold.

According to Carl G. Hoffman, Adco, Inc., who developed the new material, "The increased power in the latest eyeglass and behind-the-ear aids has made a perfect fitting earmold an absolute necessity. This is often not accomplished on the first or even the second impression unless extreme care is given to packing the canal with cotton and exerting every care to get a perfect reproduction in a mold."

The new material is applied to the canal or other part of the mold which needs to be built up. The mold or canal is then placed in the client's ear for a half hour or longer. According to the manufacturer, the client may go about his business, as there is no other attention needed for the repair. If excess material has been applied, it is squeezed out of the ear and can be removed at once.

The new material is now in use by over 100 distributors throughout the U.S., Canada, and Europe.

For details, contact Carl G. Hoffman, Adco, Inc., 631 15th St., Denver, Colo.

★ ★ ★

Hand-Held Test Instrument Permits Simple Hearing Check

Physicians can include a simple hearing test as part of every physical examination, using a new "Two-Tone Hearing Check" introduced by Maico Electronics, Inc. The instrument makes checks at 20 and 50 db, at 2,000 and 4,000 cps. An all-transistor circuit features a built-in battery test section. Battery life is more than 1,000 hours.

Ear pieces for the instrument come in two sizes. They're easily detachable and can be autoclaved safely.

For details, contact Maico Electronics, 21 N. 3rd St., Minneapolis 1, Minn.

TWO-TONE HEARING CHECK
. . . 20 and 50 db, 2000 and 4000 cps

Aurex Offers 'Speaker' For Laryngectomees

Aurex Corporation's new Electro-Larynx is an all-in-one unit which can be held in the hand. Designed to give speech to laryngectomees (persons whose normal larynx has been surgically removed), the Electro-Larynx becomes, for many, their sole means of communication. Words are formed with tongue and lips, and the voice comes from the Electro-Larynx.

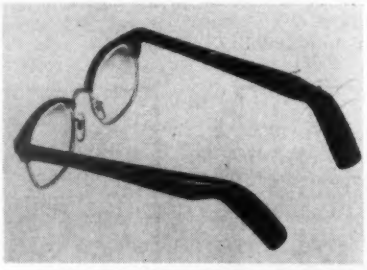
Aurex's latest model, the "Compact," features a built-in volume control which provides, at the flick of a thumb, greater volume for speaking at a distance, in crowds, restaurants, or when the battery gets weak.

For details, contact Aurex Corporation, Chicago 10, Ill.

★ ★ ★

Audibel Announces 'Slenderline' Plus Two Other New Models

Special feature of Audibel's new "Slenderline" eyeglass hearing aid is a unique hinge attachment. To



AUDIBEL'S NEW 'SLENDERLINE'
. . . . unique hinge attachment

select the correct tip length, all that's necessary is to slip on the required number of blocks and fasten in place with set screws. "Slenderline" comes in 3-and 4-transistor models.

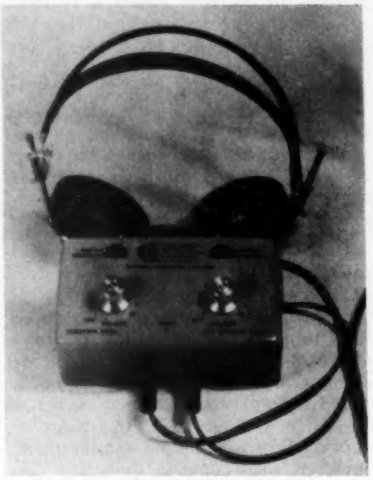
In addition, Audibel announces two other new instruments: a conventional aid featuring separate on-off switch and corrosion-proof battery compartment; and a thin over-the-ear model with multiple receiver potentials, also with on-off switch.

For details, contact The Audibel Co., 2825 Cedar Ave., Minneapolis 7, Minn.

★ ★ ★

Binaural Auditory Trainer Is All-Transistorized

Each of the two channels of a new transistorized auditory trainer has its own microphone, volume control, and two-position tone control. Two models are available. Model 31S features lightweight insert type earphones; frequency response of 100-3500 cps, and power output of 135 db above threshold. Model 31HF, with regular earphones, features response of 100-8000 cps with power output of



NEW AUDITORY TRAINER
. . . Model 31HF, with regular earphones

120 db above threshold. Basic battery-operated amplifier is the same for both models.

For details, contact Eckstein Bros., 424 N. Vermont, Los Angeles 4, Calif.

★ ★ ★

Zenith's New 'Audio-Analyzer' Permits 13 Major Tests

Thirteen major pure tone and speech tests can be made with Zenith Radio Corporation's new diagnostic "Audio-Analyzer." The instrument consists of three units: (1)

ZENITH 'AUDIO-ANALYZER'
. . . audiometer-playback-speaker unit

a 6-tube audiometer capable of measuring frequencies from 125 to 8,000 cps; (2) an electrically matched speech record playback unit; and (3) a diagnostic desk speaker which permits speech testing by either recorded or monitored live voice.

For details, contact Zenith Radio Corp., 6001 W. Dickens Ave., Chicago 39, Ill.

This Advertisement May Disturb a Lot of People

"What did he say?"
Millions of people are bothered and embarrassed by not knowing "what goes on". Perhaps this situation is all-too familiar to you. If you must strain to hear, or are bothered by "ringing" in the ears . . . you may have a hearing defect that can be costly in your business career and annoying in your social life.
For most hard-of-hearing people, fortunately, help is available. First see your doctor. Then, if your hearing loss can be corrected, visit a hearing aid specialist. He's thoroughly familiar with today's tiny but highly efficient instruments . . . is well qualified to fit you with an inconspicuous aid that suits you best.
Chances are, it'll be powered by Mallory Mercury Batteries, the amazing pill-size energy capsules pioneered by Mallory, that help make modern hearing aids possible.
P.R. MALLORY & CO. INC.
MALLORY
Electronic, Electrical and Special Metal Components • Dry Battery Systems • Semiconductors • Timer Switches

We frankly hope it does. False pride all too often keeps the hard-of-hearing person from seeking help. So we are regularly telling the 2,700,000 readers of TIME and BUSINESS WEEK about how to recognize the symptoms of hearing loss and what to do about them.

In advertisements like this, we are reminding the hard of hearing—and their friends and relatives—of the important services rendered by you and other hearing specialists and of the highly effective, yet inconspicuous, hearing instruments available today.

Mallory pioneered the tiny mercury batteries that helped make these tiny instruments possible. Mallory helps you and your clients by producing the most dependable mercury batteries money can buy.

Mallory Battery Company
Cleveland, Ohio
a division of

P R MALLORY & CO Inc.
MALLORY

In Canada, Mallory Battery Co. of Canada Ltd., Toronto 4, Canada

News from the Manufacturers

HAIC Announces 3rd Workshop

The third workshop for this year, sponsored by the Hearing Aid Industry Conference, will be held at the University of Pittsburgh, October 21 - 24. Those who wish to attend should send their letters of intent to Robert Edgell, 1 E. First St., Duluth, Minn. Registration fee of $85 (includes room and board) will be requested later.

★ ★ ★

Audio Co. of America Merges With Royal Industries, Inc.

Audio Co. of America has merged with Royal Industries, Inc., according to an announcement by Joseph Lagman, Audio president. Said Mr. Lagman: "Our association with Royal Industries provides us with working capital and other assistance that will accelerate our growth and achieve our great potential." It was also announced that Jack Silverstein, formerly executive vice-president in charge of sales for Gem, has joined the firm as Eastern Sales Manager.

★ ★ ★

Motorola Buys Dahlberg

Motorola, Inc., has purchased The Dahlberg Co. from Kenneth H. and Arnold R. Dahlberg for an undisclosed amount of Motorola stock. No changes in Dahlberg policies or personnel are planned. Dahlberg has some 200 world-wide distributors, with sales last year of just under five million dollars.

★ ★ ★

La Benz Joins Maico

Dr. Paul La Benz has joined the staff of Maico Electronics, Inc., as Director of Audiology. Formerly research supervisor in the acoustical research and clinical unit of the Veterans Administration, Dr. La Benz received his Doctor of Science degree from Johns Hopkins University in environmental medicine, with major emphasis in audiology. He has served as instructor in otolaryngology at Johns Hopkins Hospital and as assistant professor of audiology at Vanderbilt University School of Medicine.

As Director of Audiology, Dr. La Benz's activities will encompass three areas: 1) providing clinical data for dealers, engineers, and professional workers; 2) research; and 3) liaison with those in the medical and social work field.

★ ★ ★

Staff Changes at Otarion

Otarion Listener Corp, reports several changes in its organization: Paul Devereaux, formerly West Coast Division Manager, is now at Otarion headquarters as Educational Director; Herbert Wendell, formerly an assistant manager, will take Mr. Devereaux's place as Western Manager; and Leland Ray Rosemond has been appointed Manager of the Middle Atlantic Division.

The NEW "Four Hundred" Style Leader

The most outstanding audio glasses available today . . . anywhere . . . at any price.

Leader in Elegance – The new "FOUR HUNDRED" embodies a dimension of creative styling never before achieved. Your customers will be delighted with the subdued elegance of its tasteful lines. For women there is a choice of colored temple plate designs, beautifully engraved for added glamor; for men, masculine plate designs in solid color — mink, slate blue or black.

Leader in Design – The "FOUR HUNDRED" incorporates Trans-Audio's famous "Twin-Temples" — the pre-hinged, extendable tip design which makes fitting so quick and easy, insures complete wearing comfort for your customer.

Leader in Performance – Amazing quietness of operation and superb tone and clarity result from a new multi-stage transistor circuit with mu-metal shielding. The performance of the "FOUR HUNDRED" is unsurpassed.

Be the first in your area to carry the "FOUR HUNDRED". Send now for price and details.

TRANS-AUDIO CORPORATION 45 BROMFIELD ST., BOSTON 8, MASS.

3 reasons why more *thinking* distributors join Acousticon every year!

1. QUALITY—"Whatever I sell I want it to be the best—a *quality* of merchandise of which I can be proud. After fourteen years with Acousticon, I have not found any reason to change my feelings that Acousticon is the Cadillac of Hearing Aids."—Carl G. Hoffman, Denver, Colo.

2. COOPERATION—"About four years ago I left Acousticon for another brand due to a difference in opinion on company policies. Recently I attended a sales meeting where I saw a new years-ahead line of hearing aids, new merchandising policies and a new management composed of men with long experience in the Hearing Aid industry and a distinct understanding of dealer problems *plus the willingness to cooperate 100%*."—R. R. Mayo, Saint Louis, Mo.

3. PROFITS—"I take great pride in representing an organization whose top men have a real background and knowledge of the basic things so important to our work in the field. I have been an Acousticon Distributor for many years and today, as always, Acousticon has the line, *profit structure*, merchandising policies and overall benefits that will make my business continue to grow."—H. E. Meyers, Toronto, Ontario, Canada.

Are you aggressive? Is your *thinking* progressive? There may be a place for you in Acousticon's growing distributor family. Communicate in complete confidence with: Bill Brown, Vice President, Dictograph Products, Inc., 95-25 149th Street, Jamaica 35, New York.

Your Golden Circle of Sound

Acousticon

Society News and Views

New Indiyidual Certifications

Sheldon O. Bass, United Hearing Center, 608 S. Hill St., Los Angeles 14, Calif.
Gordon L. Bisel, Beltone Hearing Center, 6611 Main St., Houston 25, Texas.
Herbert J. Bluechel, Berkeley House of Hearing, 2132 Center St., Berkeley 4, Calif.
Grant E. Born, D.C., Petoskey Hearing Aid Center, 407 E. Lake St., Petoskey, Mich.
August G. Cordogan, Cordogan's Certified Hearing Service, 415 N. Broadway, Santa Ana, Calif.
Margaret M. Forbes, Stockton Hearing Aid Center, 7 S. California St., Stockton, Calif.
William H. Fox, Acousticon of Pasadena, 166 N. Los Robles, Pasadena, Calif.
Grant Godwin, Beltone Hearing Center, 206 Locust St., Santa Cruz, Calif.
Mrs. Marie Hemenway Henriksen, San Mateo County Hearing Aid Center, 1068 El Camino Real, Belmont, Calif.
Crocker B. Herd, Peninsula Hearing Service, 150 E. 3rd Ave., San Mateo, Calif.
Mina N. Hormell, Morning Side Hearing Center, 8717 S. Western Ave., Los Angeles, Calif.
Ervin E. King, Beltone Hearing Center, 3008 2nd Ave., N., Billings, Mont.
Samuel Luzkow, Maico Hearing Service, 306 Bank of America Bldg., San Diego 1, Calif.
Mrs. Agnes B. Marion, R. J. Marion & Co., 624 Bank of America Bld., San Diego 1, Calif.
Thalia P. May, Otarion of Long Beach, 144 Locust Ave., Long Beach, Calif.
Mrs. Rita K. Miller, Maico Hearing Service, 753 First National Tower, Akron 8, Ohio.
Mrs. Helen L. Moore, Beltone Hearing Aid Center, 1117½ Brown St., Napa, Calif.
Eddie Z. Orr, Eddie Z. Orr's Hearing Aid Service, 1220 Pacific Ave., Santa Cruz, Calif.
H. Dale Rather, H. Dale Rather Hearing Center, 809 N. Main St., Santa Ana, Calif.
Robert S. Rouse, Beltone Hearing Aid Service, 14 E. Romana St., Pensacola, Fla.
Emmett C. Woodward, Woodward Hearing Aid Center, 1128 19th St., Sacramento, Calif.

• LAPEL PINS
• CUFF LINKS
• TIE CLASPS

(for members only)

Here is the emblem of your Society—your symbol of Certification as one accomplished in the art of fitting and selling Hearing Aids. Solid gold, ornamented with rich blue enamel.

Lapel Pin (½"x⅝") $5.00 ea.
Cuff Links.....$15.00 pr.
Tie Clasps.....$7.50 ea.

Order Today!

Enclose Check With Order

SOCIETY OF HEARING AID AUDIOLOGISTS
260 Southfield Road
Detroit 29, Mich.

New Firm Certifications

Eddie Z. Orr's Hearing Aid Service, 1220 Pacific Ave., Santa Cruz, Calif.
United Hearing Center, 608 S. Hill St., Los Angeles 14, Calif.

★ ★ ★

First Two SHAA Chapters Approved by Board

Charters were recently granted to the first two chapters in the history of the Society—Colorado and California.

Officers of the Colorado Society of Hearing Aid Audiologists are: Carl Hoffman, president; Harvey Corske, vice-president; Bud Taylor, treasurer; Rosa Lee Langham, secretary. Marvin Pigg, John Heskett, and Harvey Riddle are directors. Address of the chapter is 323 Symes Bldg., Denver 2, Colo.

Officers of the California Society of Hearing Aid Audiologists are: Esther Daniel, president; Joseph Fortier, vice-president; and Harold Pahl, secretary-treasurer.

Governors are: Roy zumBrunnen (N. Los Angeles Area); Frank Wirtz (S. Los Angeles Area); Jack Taylor (Valley and Bay Area); and Clint Adams (Northern California Area).

Address of the California Chapter is 201 Andreson Bldg., San Bernardino, Calif.

CALIFORNIA Chapter officers; front row: Harold Pahl, Esther Daniel, Joseph Fortier. Back row: Frank Wirtz, Clint Adams, Roy zumBrunnen, Jack Taylor, and SHAA Governor Verl Conn.

The California charter was presented by SHAA Governor Verl Conn, at a meeting held August 22 and 23 at Santa Cruz. State Senator Judah addressed the meeting on the mechanics of presenting a bill in the state legislature. The meeting also heard talks by Society President Ken Wood, Vice-President Max Elbaum, Governor-at-Large Tony Zanolli, and Executive Director Jim Elliott. Each spoke via long distance telephone, over the meeting's public address system.

Mrs. Helen L. Clemenson, Santa Cruz County Director of Social Welfare, gave a general outline of the county's welfare program.

NEW APPLICATIONS RECEIVED

NOTICE TO OUR READERS: The Society's By-Laws require that the names of applicants for certification be published in each issue of Audecibel. The reason for this procedure is to insure that the Society certifies only reputable indiivduals whose business and professional ethics are above reproach. If you have reason to believe that an applicant listed below **should not** be certified, we would appreciate it if you would send us a letter to that effect, stating specific reasons. Please be assured that we shall keep the source of our information confidential, and shall utilize such information only as the basis for further investigation, not as a reason in itself for rejecting an application. Send all letters to: S.H.A.A., 260 Southfield Road, Detroit 29, Mich.

Individual Applications Received

Appleby, Charles H. San Diego Hearing Aid Center, 235 Broadway, San Diego 1, Calif.
Barr, Edward R. San Diego Hearing Aid Center, 235 Broadway, San Diego 1, Calif.
Barr, Irene E. San Diego Hearing Aid Center, 235 Broadway, San Diego 1, Calif.
Bergeron, Pierre H. Maico Hearing Service, Inc., 895 Cote d'Abraham, Quebec, Que., Canada.
Bethune, Donald M. Audiotone Hearing Center, 308 8th Ave., S.W., Calgary, Alta., Canada.
Burkhart, Ralph W. Acousticon Hearing Aid Center, 280 S.E. 2nd Ave., Ft. Lauderdale, Fla.
Caren, Jack. Beltone Hearing Center, 175 Market St., Paterson, N. J.
Christensen, Elfreda E. General Medical Supply, 526 W. 5th Ave., Pomona, Calif.
Combs, William S. Acousticon Combs of Dayton, 1165-66 Reibold Bldg., Dayton 2, Ohio.
Donatello, George A., D.C. 2214 Santa Clara Ave., Alameda, Calif.
Egan, John T. J. Jessop and Sons, 1041 5th Ave., San Diego 1, Calif.
Folsom, Clarence. Minnesota Hearing Center, 43 S. Ninth St., Minneapolis, Minn.
Fox, Joseph A., D.C. 16717 E. 14th St., San Leandro, Calif.
Gleeson, Claude P. Dahlberg Hearing Service, 33 N. 4th St., St. Petersburg 1, Fla.
Greene, Bernard. Associated Dahlberg Hearing Center, 315 Arizona Ave., Santa Monica, Calif.
Honeycutt, H. L. Southern Hearing Center, Inc., 415 N. Adams St., Tallahassee, Fla.
Ladof, Max. Beltone Hearing Service, 53 E. Santa Clara St., San Jose, Calif.
Legler, Fred. Southwestern Hearing Aid Co., 705 Olive St., St. Louis 1, Mo.
Macdonald, Andrew. Audiphone Co. of Fresno, 564 Garland Ave., Fresno 4, Calif.
MacDonald, Edith W. Audiotone Hearing Centre, 303 Tegler Bldg., Edmonton, Alta., Canada.
McViccar, John H. Maico of Lansing, 213 E. Hillsdale, Lansing 33, Mich.
Morrow, Earl. 194 Indian Point St., Newport, Vt.
Older, Willis M. Transistor Hearing Aid Co., 135 W. Santa Clara St., San Jose, Calif.
Piane, James. Audiphone Co. of Kansas City, Inc., 415 Professional Bldg., Kansas City 6, Mo.
Schottler, Paul F. United Hearing Center, 608 S. Hill St., Los Angeles 14, Calif.
Spence, Anna S. Spence Hearing Service, 424 Griesheim Bldg., Bloomington, Ill.
Stemson, Gordon R. Institute for Better Hearing, 618 Main St., Penticton, B.C., Canada.
Thompson, Gilbert E. Audivox Hearing Center, 408 Main St., Evansville, Ind.
Vollhaber, George A. Maico Hearing Service, 114 Peachtree St., Atlanta, Ga.
Williams, S. Leroy. Beltone Hearing Service, 431 Lincoln St., Johnston, Pa.

Firm Application Received

Beltone Hearing Service, 431 Lincoln St., Johnston, Pa.

WHAT DO *YOU* DO WHEN YOU CAN'T FIT A PROSPECT?

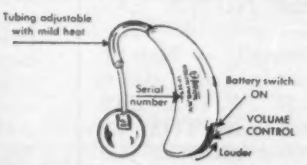
With OTARION You Have an Instrument for Every Restorable Hearing Loss!

Now Otarion offers an amazingly designed hearing masterpiece in the Model L-60 eyeglass hearing aid. This highly personalized, *extremely powerful* model has established a new high standard of excellence in eyeglass hearing aids. Because of its revolutionary Rx Circuit, the L-60 can be adjusted instantly to meet the particular need of any client. The L-60 offers the widest range of power-fitting available and the versatility needed to do an outstanding job in fitting the mildest to the most difficult cases.

"Target Hearing", the Otarion L-70 Listener, is the most unique advance of its kind in the hearing aid field today. It is the only eyeglass hearing aid with direct frontal hearing. Because the microphone is located in the front frame of these handsome hearing glasses, it is now possible for a hard-of-hearing person to "*hear where he looks*," naturally and effortlessly. Full volume control advance is possible without feed-back whistle. The L-70 is an ideal instrument for persons with losses from 20 to 75 decibels.

Otarion Model L-30 hearing glasses offer a whole new *dimension in hearing*. For the first time, hearing of such remarkable depth and richness is possible that users marvel at its realism. And, expert engineering and design have made the streamlined temples of the L-30 a style leader. When fitted as a Stereophonic Listener, with a hearing aid in each temple, the L-30 provides the finest Stereophonic hearing that is available today for clients with losses from 20 decibels to 60 decibels.

Here's the perfect solution for the man who doesn't want to wear glasses and the woman who feels she doesn't look her best in glasses. The tiny Whisperwate is *half the length of a cigarette and almost as thin*. Snuggles comfortably behind the smallest ear. Designed for use with an external receiver, the Whisperwate offers greater acoustic gain, better tone quality and better overall performance for your clients.



Contact us for information about the complete OTARION *line*

Otarion Listener CORPORATION® OSSINING, N.Y.

Write . . .

Leland Rosemond, President, Otarion Listener Corporation, Ossining, New York for information about exclusive Otarion franchises available now in several productive areas.

WHEN YOU HANDLE OTARION EVERY PROSPECT BECOMES A SALE

CLASSIFIED ADVERTISING

CLASSIFIED ADVERTISING RATES

$5.00 minimum—four lines (25 words) or less. Additonal lines or fractions thereof, $1.25 each (six words per line). Add extra line for keyed replies. No agency discount. Bold face lines and lines in capitals carried at double rate. Cash with order.

MAKE a PROFIT on EVERY CUSTOMER . . . Whether it is a Battery Sale or Instrument Sale. 10% Cash Discount, Over Wholesale Battery Prices on orders over $200.00 . . . Slightly less on smaller orders. GOOD Used HEARING GLASSES, "In the Ear," "Behind the Ear" and BREAST MODELS at lowest prices . . . Write HEARING MART, 84 Ellis Street, San Francisco 2, Calif.

FOR SALE

STOP EARMOLD FEEDBACK . . . IMMEDIATELY . . . SAFELY . . . PERMANENTLY with ADCO SOFT REBUILDER COMPOUND. Sets right in the client's ear. Cures in 15 minutes while in the ear. No heat. No smarting. Cures feedback problems right on the spot without tools or equipment. No trimming or buffing necessary. Saves time . . . dollars . . . sales. Now in use all over the nation. One half unit, $5.50. One unit makes 100-200 repairs, $10.25. Send check, save postage. Money back guarantee. ADCO, Inc., 631 - 15th St., Denver 2, Colo.

REGISTRATION
. . . for the Annual Meeting:
THURS., OCT 8, 1:00-9:00 p.m.
FRI., OCT. 9, 8:00-9:00 a.m.

Encountering New Earmold Problems With Hearing Aid Glasses? ? ? ?

MANY DEALERS ARE - -

AND ARE FINDING

A SOLUTION WITH Mid-States

SOFTEX and NUTEX EARMOLD

SOFTEX and NUTEX EARMOLDS have swept the nation used conventionally — Now applied to hearing aid glasses, SOFTEX and NUTEX EARMOLDS are proving THE ANSWER to close acoustical seal with comfort to the user.

SOFTEX and NUTEX were developed *by* hearing aid people *for* hearing aid people.

CHARTER MEMBERS:
Hearing Aid Industry Conference, Inc.

Mid-States Laboratories
600 N. Francis
Wichita, Kansas

"The QUALITY Earmold Facility"

"Wanted: Bank Tellers . . . those wearing hearing aids preferred."

This ad recently appeared in the Elizabeth (N. J.) *Daily Journal.* It was placed by Nathan R. Leavitt, president of the Central Home Trust Co.

Why specify "hearing aids preferred"?

According to bank officials, all tellers have shortages from time to time. In fact, this is considered one of the ordinary expenses of doing business in banking.

Many of these shortages are due to talkative customers — people who try to carry on a conversation with a teller while he is counting money. But if the teller wore a hearing aid, he could eliminate all distracting talk by shutting off his battery.

The ad did not result in the employment of a teller with a hearing aid, but it did elicit much favorable comment. For example, the *Daily Journal* ran this editorial, quoted in part:

"All of us, as we have stood in a long line stretching away before some bank teller's window, must have had ample time at one time or another to ponder on the teller's three basic attributes, his unending store of patience, his marked efficiency and his amazing concentration under what seemed to us impossible conditions. And we couldn't be entirely wrong as we read in this newspaper the advertisement of a banker unafraid to take a perfectly logical step by introducing to the teller's cage the hearing aid as an ally to concentration.

"This is an innovation in banking that other bankers, all of whom have similar problems, are bound to watch. Here at once is discouragement for the innocent chatterbox who illy understands the mischief that idle talk can provoke even as a designing fumbler may turn it to his advantage. And here is another demonstration of faith in concentration that should convey a lesson to those in management who have been so slow to employ the so-called physically handicapped.

"Nobody would be so inane as to consider the wearer of a hearing aid as physically handicapped. Still, it is extra concentration that can come from disconnecting that hearing aid that stirs thought of those other trained persons who have been regarded physically handicapped for reasons of locomotion yet gained a rewarding power of concentration that is most valuable. These are the people who in office and factory, on the record, are setting all sorts of marks for concentration, and bankers wouldn't be advertising for tellers with hearing aids they can turn off on the chatterboxes if concentration didn't mean better production."

● THE AUDIOMETER

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This, to me, represents the application of purpose that we have been talking about.

Both the doctor and the hearing aid dealer have a purpose — but in addition they have a duty. Their purpose is to do the best that they possibly can in the way of testing and in remedial action, and their duty is to honestly qualify each diagnosis, each fitting and each sale so that the prospect is fully aware of the function of a hearing aid, the value they will receive from it, and the physical limitations which they themselves impose upon the use of the hearing aid.

If we keep before us the intelligent application of our purpose and our duty, we will continue to prosper, to become more professional, to advance in our business and to continually hold our heads high in what I consider to be the most wonderful business on the face of the earth — the Hearing Aid Business!

Another pace setter of advanced design and top quality

by TELEX

The first truly cordless hearing aid, Telex All-in-Ear is typical of the scientific achievements you can expect from Telex.

This is a hearing aid designed to sell . . . because it meets the demand for convenience plus performance. It is a powerful, fully transistorized hearing aid that has no equal. Worn entirely in the ear. No cords, no tubes, nothing in hair or behind ear. Includes volume control, separate off-on switch and hermetically sealed amplifier for long trouble-free life.

check these reasons why

A TELEX FRANCHISE

is the opportunity of a lifetime

BECAUSE Telex offers the most advanced instruments and top quality throughout the line.

BECAUSE Telex has the most complete line in the industry, a wide price range and an excellent profit structure.

BECAUSE Telex people *know* the hearing aid business. They support the distributor in all phases of his business to build a successful operation.

now's the time to get acquainted with

TELEX

THIS CAN BE THE MOST IMPORTANT STEP YOU MAKE THIS YEAR!

TELEX • TELEX PARK • ST. PAUL 1, MINNESOTA

Yes! Dept. B-1

Send me more information about acquiring a Telex franchise for my area.

I now cover the following territory_____

NAME_____

ADDRESS_____

CITY_____ STATE_____

AUDECIBEL
260 Southfield Road
Detroit 29, Michigan

Form 3547 Requested

BULK RATE
U. S. POSTAGE
PAID
DETROIT, MICHIGAN
Permit No. 7468

VOID

the most important word she ever heard

EVEREADY
TRADE-MARK

MERCURY AND CARBON ZINC HEARING AID BATTERIES

THE NAME YOUR CUSTOMERS KNOW AND TRUST